Thematic Research Training 2020-2021

Crops and Soil group

Chairs: Dr Craig Simpson (James Hutton Institute) with Professor Christine Watson (SRUC)

Session 1: "Sustainable diets" - 8 December 2020, 9:00-14:15

Session organisers:

- Poppy Frater - P.Frater@sms.ed.ac.uk)
- Susan Eshelman - M.S.E.Eshelman@sms.ed.ac.uk

Session Description:

Emerging research and evidence calls for dietary shifts for the benefit of ourselves and our planet (e.g. https://eatforum.org/eat-lancet-commission/....). As PhD students we must understand the wider implications for our work – our research is important! How our work feeds into the global picture, has the potential to change policy recommendations and the social needs for global population dietary transition will be discussed to help us to achieve impact. This workshop aims to discuss agriculture, diet, and the environment, while considering EatLancet and participants' individual research.

Learning outcomes:

1. Gain a better understand about the concepts related to agriculture, diet, and the environment.
2. Practice putting research within the context of the wider world.
3. Interact and discuss with interdisciplinary researchers.

Session requirements:

As we ask that students participate in group discussions, they will need to be in a place where they can have their camera and microphone on. Student should consider session topic with regards to their own research project, as well as their research area. All participants should be prepared to bring their ideas and questions to group discussions.

Session schedule:

Times	Session details
9:00-9:30	Introduction - *Susan Eshelman and Poppy Frater*
9:30-10:00	Sustainable diets; climate change, land use and food security (Livewell Project) - *Professor Jennie Macdiarmid*
10:00-10:20	Breakout Rooms
10:20-10:30	Discussion (Q+A)
10:30-11:00	Screen Break
11:00-11:30	From bioactive plant compounds to global food security – transcending disciplines - *Professor Wendy Russell*
11:30-11:50	Breakout Rooms

11:50-12:00	Discussion (Q+A)
12:00-12:30	Public behaviour change and policy - *Professor Mads Fischer-Moller*
12:30-12:50	Breakout Rooms
12:50-13:00	Discussion (Q+A)
13:00-13:30	Screen Break
13:30-14:15	Closing Remarks – *Professor Christine Watson, Susan Eshelman, and Poppy Frater*

Recommended reading:

- Summary Report of EATLancet Report (https://eatforum.org/content/uploads/2019/07/EAT-Lancet_Commission_Summary_Report.pdf)

- Macdiarmid, J. I., Douglas, F., & Campbell, J. (2016). Eating like there's no tomorrow: Public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet. Appetite, 96, 487–493. https://doi.org/10.1016/j.appet.2015.10.011

- The planetary health diet (https://www.stockholmresilience.org/research/research-news/2019-01-17-the-planetary-health-diet.html)

Session 2: "Omics and Bioinformatics approaches in crop protection" - 26 February 2021, 9:15 – 14:00

Session organisers:

- Lynn Brown: Lynn.HunterBrown@hutton.ac.uk
- Moray Smith: Moray.Smith@hutton.ac.uk

Session Description:

This session aims to look at current methods used in plant research for crop protection. We hope students will learn about approaches they are unfamiliar with and understand how these may be applicable in their own area of study. We also hope students will gain insight into bioinformatics and what skills in this area they may wish to develop and find beneficial to their studies.

Session Schedule:

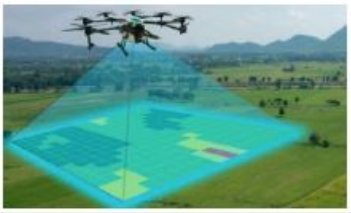
Times	Sessions
09.15-09.30	Set up & welcome by student organisers
09.30-10.15	**Transcriptomics – Dr Matthew Parker (30min talk + Q&A)**
10.15-10.30	Break
10.30-11.15	**Genomics – Dr Ingo Hein (30min talk + Q&A)**
11.15-11.30	Break
11.30-12.15	**Proteomics – Dr Alex Jones (30min talk + Q&A)**
12.15-13.15	Lunch
13.15-14.00	**Bioinformatics – Dr David Martin & Dr James Abbott (Interactive Discussion)**

Session 3: "Remote sensing for Agriculture" - 23 April 2021, 9:00–14:15

Session organisers:

- Daniel Dornan <d.dornan.20@abdn.ac.uk>
- Tamsin Woodman t.woodman.20@abdn.ac.uk

Host supervisors:
Sandra Telfer & Justin Travis
Host students:
Daniel Dornan (d.dornan.20@abdn.ac.uk)
Tamsin Woodman (t.woodman.20@abdn.ac.uk)



09:00 – 09:15	**Welcome & introduction**
09:15 – 09:45	**Group updates on projects**
09:45 – 10:15	**What is remote sensing?** *Speaker: Maddie Grady, Forest research*
10:15 – 10:30	**Q&A Session**
10:30 – 11:15	**Journal club discussion: "***Remote sensing for agricultural applications: A meta-review'' by Weiss, et al. (2020).* *Moderator: Daniel Dornan*
11:15 – 11:30	**Screen break**
11:30 – 12:15	**Workshop:** Lidar in R *Moderator: Tamsin Woodman*
12:15 – 13:00	**Lunch**
13:00 – 13:30	**Modelling land-use change** *Speaker: Dr Peter Alexander, University of Edinburgh*
13:30 – 13:45	**Q&A Session**
13:45– 14:00	**Breakout room:** *What are the wider implications of remote sensing data and modelling techniques?*
14:00 – 14:15	**Conclusion & End of the day** *Moderators: Daniel Dornan & Tamsin Woodman*

Session Description:

Emerging techniques such as remote sensing have a wide range of applications in agriculture and ecology. This session aims to introduce remote sensing and discuss some of its applications, benefits and limitations within agriculture. We hope students will also gain an understanding of how modelling techniques can be applied to and informed by remote sensing data.

Learning outcomes:

1. Gain an understanding of emerging remote sensing techniques and their wide-reaching applications.
2. Be able to critically review the limitations and benefits of remote sensing applications within a wide range of potential future projects.
3. Explore downstream modelling approaches associated with remote sensing data.

Requirements prior to session:

Journal club:

Read Weiss, *et al.* (2020) "Remote sensing for agricultural applications: A meta-review" and bullet points talking points to stimulate discussion.

Workshop:

For the R workshop, students should have access to R with the 'raster' and 'rgdal' packages installed, which can be done using the code below. Students should download the dataset for the practical from https://ndownloader.figshare.com/files/7446715.

```
install.packages("raster")

install.packages("rgdal")
```

Session 4: "Industry perspectives on agricultural challenges" - 25 June 2021, 10:00-16:00

Session organisers:

- Lynn Brown: Lynn.HunterBrown@hutton.ac.uk
- Olivia Fraser: Olivia.Fraser@ed.ac.uk

Session description:

This session will look at the challenges in agriculture and the industry's perspectives on these challenges. The aim is for students to gain a greater understanding of the current challenges and how these impact growers, producers and the wider farming industry. The workshop will also examine potential solutions to these challenges and explore how farming could look in the future.

Session requirements:

The session will be held on blackboard collaborate. Students will also be asked to speak about their projects potential impact on agriculture and how they feel it will benefit the farming industry in the future.

Session schedule:

Times	Sessions
10:00-10:15	Set up
10:15-10:45	**Survey Discussion**
10:45-11:00	Break
11:00-12:00	**Speaker: Nick Simmons – Corteva Agriscience**
12:00-13:00	Lunch
13:00-14:00	**Speaker: Col Gordon**
14:00-14:10	Break
14:10-15:10	**Speaker: Dr Edward Dickin – Harper Adams University**
15:10-16:00	**Individual Project Discussions and Conclusions of the Day**